

SEQUENCE LISTING

<110> CARTER, Graham
CARR, Francis J.

<120> ANTI-IDIOTYPE ANTI-CEA ANTIBODY
MOLECULES AND METHODS

<130> MER-132

<150> PCT/03/03580

<151> 2003-04-07

<150> EP 02007885.3

<151> 2002-04-09

<160> 34

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 117

<212> PRT

<213> Mus musculus

<400> 1

Glu	Val	Gln	Leu	Gln	Gln	Ser	Gly	Pro	Glu	Leu	Val	Lys	Pro	Gly	Ala
1				5					10					15	
Ser	Val	Lys	Ile	Ser	Cys	Lys	Thr	Ser	Gly	His	Thr	Phe	Thr	Glu	Tyr
			20					25					30		
Asn	Met	Gln	Trp	Val	Lys	Gln	Ser	Leu	Gly	Gln	Ser	Leu	Glu	Trp	Ile
		35					40					45			
Gly	Gly	Ile	Asn	Pro	Asn	Asn	Val	Gly	Ser	Ile	Tyr	Asn	Gln	Lys	Phe
	50					55					60				
Arg	Gly	Lys	Ala	Thr	Leu	Thr	Val	Asp	Lys	Ser	Ser	Ser	Thr	Ala	Tyr
65					70				75					80	
Met	Glu	Leu	Arg	Ser	Leu	Thr	Ser	Glu	Asp	Ser	Ala	Val	Tyr	Tyr	Cys
			85					90					95		
Ala	Arg	Gly	Tyr	Gly	Asn	Tyr	Val	Ala	Tyr	Trp	Gly	Gln	Gly	Thr	Leu
		100						105					110		
Val	Thr	Val	Ser	Ala											
			115												

<210> 2

<211> 107

<212> PRT

<213> Mus musculus

<400> 2

Asp	Ile	Val	Met	Thr	Gln	Ser	Gln	Lys	Phe	Met	Ser	Thr	Ser	Val	Gly
1				5					10					15	

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Asp Arg Val Ser Val Thr Cys Lys Ala Ser Gln Asn Val Asn Thr Asn
      20      25      30
Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Ser Leu Ile
      35      40      45
Tyr Ser Ala Ser Tyr Arg Tyr Ser Gly Val Pro Asp Arg Phe Thr Gly
      50      55      60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Asn Val Gln Ser
65      70      75      80
Glu Asp Leu Ala Glu Phe Phe Cys Gln Gln Tyr Asn Arg Tyr Pro Phe
      85      90      95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
      100      105

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<210> 3
 <211> 645
 <212> PRT
 <213> Homo sapiens

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<400> 3
Lys Leu Thr Ile Glu Ser Thr Pro Phe Asn Val Ala Glu Gly Lys Glu
 1      5      10      15
Val Leu Leu Leu Val His Asn Leu Pro Gln His Leu Phe Gly Tyr Ser
      20      25      30
Trp Tyr Lys Gly Glu Arg Val Asp Gly Asn Arg Gln Ile Ile Gly Tyr
      35      40      45
Val Ile Gly Thr Gln Gln Ala Thr Pro Gly Pro Ala Tyr Ser Gly Arg
      50      55      60
Glu Ile Ile Tyr Pro Asn Ala Ser Leu Leu Ile Gln Asn Ile Ile Gln
65      70      75      80
Asn Asp Thr Gly Phe Tyr Thr Leu His Val Ile Lys Ser Asp Leu Val
      85      90      95
Asn Glu Glu Ala Thr Gly Gln Phe Arg Val Tyr Pro Glu Leu Pro Lys
      100      105      110
Pro Ser Ile Ser Ser Asn Asn Ser Lys Pro Val Glu Asp Lys Asp Ala
      115      120      125
Val Ala Phe Thr Cys Glu Pro Glu Thr Gln Asp Ala Thr Tyr Leu Trp
      130      135      140
Trp Val Asn Asn Gln Ser Leu Pro Val Ser Pro Arg Leu Gln Leu Ser
145      150      155      160
Asn Gly Asn Arg Thr Leu Thr Leu Phe Asn Val Thr Arg Asn Asp Thr
      165      170      175
Ala Ser Tyr Lys Cys Glu Thr Gln Asn Pro Val Ser Ala Arg Arg Ser
      180      185      190
Asp Ser Val Ile Leu Asn Val Leu Tyr Gly Pro Asp Ala Pro Thr Ile
      195      200      205
Ser Pro Leu Asn Thr Ser Tyr Arg Ser Gly Glu Asn Leu Asn Leu Ser
      210      215      220
Cys His Ala Ala Ser Asn Pro Pro Ala Gln Tyr Ser Trp Phe Val Asn
225      230      235      240
Gly Thr Phe Gln Gln Ser Thr Gln Glu Leu Phe Ile Pro Asn Ile Thr
      245      250      255
Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn Ser Asp Thr

```

		260						265					270				
Gly	Leu	Asn	Arg	Thr	Thr	Val	Thr	Thr	Ile	Thr	Val	Tyr	Ala	Glu	Pro		
		275						280				285					
Pro	Lys	Pro	Phe	Ile	Thr	Ser	Asn	Asn	Ser	Asn	Pro	Val	Glu	Asp	Glu		
		290					295				300						
Asp	Ala	Val	Ala	Leu	Thr	Cys	Glu	Pro	Glu	Ile	Gln	Asn	Thr	Thr	Tyr		
305					310					315					320		
Leu	Trp	Trp	Val	Asn	Asn	Gln	Ser	Leu	Pro	Val	Ser	Pro	Arg	Leu	Gln		
			325					330					335				
Leu	Ser	Asn	Asp	Asn	Arg	Thr	Leu	Thr	Leu	Leu	Ser	Val	Thr	Arg	Asn		
		340						345				350					
Asp	Val	Gly	Pro	Tyr	Glu	Cys	Gly	Ile	Gln	Asn	Glu	Leu	Ser	Val	Asp		
		355					360				365						
His	Ser	Asp	Pro	Val	Ile	Leu	Asn	Val	Leu	Tyr	Gly	Pro	Asp	Asp	Pro		
370						375					380						
Thr	Ile	Ser	Pro	Ser	Tyr	Thr	Tyr	Tyr	Arg	Pro	Gly	Val	Asn	Leu	Ser		
385					390					395					400		
Leu	Ser	Cys	His	Ala	Ala	Ser	Asn	Pro	Pro	Ala	Gln	Tyr	Ser	Trp	Leu		
			405					410					415				
Ile	Asp	Gly	Asn	Ile	Gln	Gln	His	Thr	Gln	Glu	Leu	Phe	Ile	Ser	Asn		
		420						425				430					
Ile	Thr	Glu	Lys	Asn	Ser	Gly	Leu	Tyr	Thr	Cys	Gln	Ala	Asn	Asn	Ser		
		435					440				445						
Ala	Ser	Gly	His	Ser	Arg	Thr	Thr	Val	Lys	Thr	Ile	Thr	Val	Ser	Ala		
450						455				460							
Glu	Leu	Pro	Lys	Pro	Ser	Ile	Ser	Ser	Asn	Asn	Ser	Lys	Pro	Val	Glu		
465					470					475					480		
Asp	Lys	Asp	Ala	Val	Ala	Phe	Thr	Cys	Glu	Pro	Glu	Ala	Gln	Asn	Thr		
			485					490					495				
Thr	Tyr	Leu	Trp	Trp	Val	Asn	Gly	Gln	Ser	Leu	Pro	Val	Ser	Pro	Arg		
		500						505				510					
Leu	Gln	Leu	Ser	Asn	Gly	Asn	Arg	Thr	Leu	Thr	Leu	Phe	Asn	Val	Thr		
		515					520					525					
Arg	Asn	Asp	Ala	Arg	Ala	Tyr	Val	Cys	Gly	Ile	Gln	Asn	Ser	Val	Ser		
530						535					540						
Ala	Asn	Arg	Ser	Asp	Pro	Val	Thr	Leu	Asp	Val	Leu	Tyr	Gly	Pro	Asp		
545					550					555					560		
Thr	Pro	Ile	Ile	Ser	Pro	Pro	Asp	Ser	Ser	Tyr	Leu	Ser	Gly	Ala	Asn		
			565					570						575			
Leu	Asn	Leu	Ser	Cys	His	Ser	Ala	Ser	Asn	Pro	Ser	Pro	Gln	Tyr	Ser		
		580						585				590					
Trp	Arg	Ile	Asn	Gly	Ile	Pro	Gln	Gln	His	Thr	Gln	Val	Leu	Phe	Ile		
		595					600					605					
Ala	Lys	Ile	Thr	Pro	Asn	Asn	Asn	Gly	Thr	Tyr	Ala	Cys	Phe	Val	Ser		
610						615					620						
Asn	Leu	Ala	Thr	Gly	Arg	Asn	Asn	Ser	Ile	Val	Lys	Ser	Ile	Thr	Val		
625					630					635					640		
Ser	Ala	Ser	Gly	Thr													
			645														

<210> 4

<211> 347

<212> PRT

<213> Homo sapiens

<400> 4

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Asp Cys Gly Leu Pro Pro Asp Val Pro Asn Ala Gln Pro Ala Leu Glu
 1           5           10           15
Gly Arg Thr Ser Phe Pro Glu Asp Thr Val Ile Thr Tyr Lys Cys Glu
          20           25           30
Glu Ser Phe Val Lys Ile Pro Gly Glu Lys Asp Ser Val Ile Cys Leu
          35           40           45
Lys Gly Ser Gln Trp Ser Asp Ile Glu Glu Phe Cys Asn Arg Ser Cys
          50           55           60
Glu Val Pro Thr Arg Leu Asn Ser Ala Ser Leu Lys Gln Pro Tyr Ile
65           70           75           80
Thr Gln Asn Tyr Phe Pro Val Gly Thr Val Val Glu Tyr Glu Cys Arg
          85           90           95
Pro Gly Tyr Arg Arg Glu Pro Ser Leu Ser Pro Lys Leu Thr Cys Leu
          100          105          110
Gln Asn Leu Lys Trp Ser Thr Ala Val Glu Phe Cys Lys Lys Lys Ser
          115          120          125
Cys Pro Asn Pro Gly Glu Ile Arg Asn Gly Gln Ile Asp Val Pro Gly
          130          135          140
Gly Ile Leu Phe Gly Ala Thr Ile Ser Phe Ser Cys Asn Thr Gly Tyr
145          150          155          160
Lys Leu Phe Gly Ser Thr Ser Ser Phe Cys Leu Ile Ser Gly Ser Ser
          165          170          175
Val Gln Trp Ser Asp Pro Leu Pro Glu Cys Arg Glu Ile Tyr Cys Pro
          180          185          190
Ala Pro Pro Gln Ile Asp Asn Gly Ile Ile Gln Gly Glu Arg Asp His
          195          200          205
Tyr Gly Tyr Arg Gln Ser Val Thr Tyr Ala Cys Asn Lys Gly Phe Thr
          210          215          220
Met Ile Gly Glu His Ser Ile Tyr Cys Thr Val Asn Asn Asp Glu Gly
225          230          235          240
Glu Trp Ser Gly Pro Pro Pro Glu Cys Arg Gly Lys Ser Leu Thr Ser
          245          250          255
Lys Val Pro Pro Thr Val Gln Lys Pro Thr Thr Val Asn Val Pro Thr
          260          265          270
Thr Glu Val Ser Pro Thr Ser Gln Lys Thr Thr Thr Lys Thr Thr Thr
          275          280          285
Pro Asn Ala Gln Ala Thr Arg Ser Thr Pro Val Ser Arg Thr Thr Lys
          290          295          300
His Phe His Glu Thr Thr Pro Asn Lys Gly Ser Gly Thr Thr Ser Gly
305          310          315          320
Thr Thr Arg Leu Leu Ser Gly His Thr Cys Phe Thr Leu Thr Gly Leu
          325          330          335
Leu Gly Thr Leu Val Thr Met Gly Leu Leu Thr
          340          345
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<210> 5

<211> 17

<212> PRT

<213> Mus musculus

<400> 5

Gly Ile Asn Pro Asn Asn Val Gly Ser Ile Tyr Asn Gln Lys Phe Arg
1 5 10 15
Gly

<210> 6

<211> 8

<212> PRT

<213> Mus musculus

<400> 6

Gly Tyr Gly Asn Tyr Val Ala Tyr
1 5

<210> 7

<211> 10

<212> PRT

<213> Homo sapiens

<400> 7

Thr Leu Leu Ser Val Thr Arg Asn Asp Val
1 5 10

<210> 8

<211> 9

<212> PRT

<213> Homo sapiens

<400> 8

Tyr Leu Ser Gly Ala Asn Leu Asn Leu
1 5

<210> 9

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> modified heavy chain variable region of murine
antibody

<400> 9

Glu Val Gln Leu Gln Gln Ser Gly Pro Glu Thr Gly Lys Pro Gly Ala
1 5 10 15
Ser Gly Lys Met Ser Cys Lys Thr Ser Gly His Thr Ser Thr Glu His
20 25 30

Asn	Gly	Gln	Trp	Ala	Lys	Gln	Ser	Pro	Gly	Gln	Ser	Leu	Glu	Trp	Ile
		35					40					45			
Gly	Gly	Ile	Asn	Pro	Asn	Asn	Val	Gly	Ser	Ile	Tyr	Asn	Gln	Lys	Phe
		50				55					60				
Arg	Gly	Lys	Ala	Thr	Leu	Thr	Ala	Asp	Lys	Ser	Ser	Ser	Thr	Ala	His
65					70				75					80	
Met	Glu	Leu	Arg	Ser	Pro	Thr	Ser	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys
				85				90					95		
Ala	Arg	Gly	Tyr	Gly	Asn	Tyr	Val	Ala	Tyr	Trp	Gly	Gln	Gly	Thr	Leu
		100						105					110		
Val	Thr	Val	Ser	Ala											
		115													

<210> 10

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> modified heavy chain variable region of murine antibody

<400> 10

Glu	Val	Gln	Leu	Gln	Gln	Ser	Gly	Pro	Glu	Thr	Gly	Lys	Pro	Gly	Ala
1				5				10					15		
Ser	Gly	Lys	Met	Ser	Cys	Lys	Thr	Ser	Gly	His	Thr	Ser	Thr	Glu	His
		20				25						30			
Asn	Gly	Gln	Trp	Ala	Lys	Gln	Ser	Pro	Gly	Gln	Ser	Leu	Glu	Trp	Asn
		35				40						45			
Gly	Gly	Arg	Asn	Asn	Ser	Ile	Val	Lys	Ser	Ile	Thr	Val	Ser	Ala	Ser
		50			55					60					
Gly	Thr	Lys	Ala	Thr	Leu	Thr	Ala	Asp	Lys	Ser	Ser	Ser	Thr	Ala	His
65					70				75					80	
Met	Glu	Leu	Arg	Ser	Pro	Thr	Ser	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys
				85				90					95		
Ser	Pro	Ser	Tyr	Thr	Tyr	Tyr	Arg	Pro	Gly	Trp	Gly	Gln	Gly	Thr	Leu
		100						105					110		
Val	Thr	Val	Ser	Ala											
		115													

<210> 11

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> modified heavy chain variable region of murine antibody

<400> 11

Glu	Val	Gln	Leu	Gln	Gln	Ser	Gly	Pro	Glu	Thr	Gly	Lys	Phe	Gly	Ala
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

1				5					10					15		
Thr	Ile	Ser	Phe	Ser	Cys	Asn	Thr	Gly	Tyr	Lys	Leu	Phe	Gly	Ser	Thr	
			20					25					30			
Ser	Gly	Gln	Trp	Ala	Arg	Gln	Ser	Pro	Gly	Gln	Ser	Leu	Glu	Trp	Asn	
		35				40					45					
Gly	Gly	Arg	Asn	Asn	Ser	Ile	Val	Lys	Ser	Ile	Thr	Val	Ser	Ala	Ser	
	50				55					60						
Gly	Thr	Lys	Ala	Thr	Leu	Thr	Ala	Asp	Lys	Ser	Ser	Ser	Thr	Ala	His	
65				70				75						80		
Met	Glu	Leu	Arg	Ser	Pro	Thr	Ser	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys	
			85					90					95			
Ser	Pro	Ser	Tyr	Thr	Tyr	Tyr	Arg	Pro	Gly	Trp	Gly	Gln	Gly	Thr	Leu	
		100						105				110				
Val	Thr	Val	Ser	Ala												
		115														

<210> 12

<211> 117

<212> PRT

<213> Artificial Sequence

<220>

<223> modified heavy chain variable region of murine antibody

<400> 12

Glu	Val	Gln	Leu	Gln	Gln	Ser	Gly	Pro	Thr	Leu	Val	Lys	Pro	Thr	Gln	
1				5				10					15			
Thr	Leu	Thr	Leu	Thr	Cys	Thr	Leu	Ser	Gly	Phe	Ser	Phe	Gly	Ser	Thr	
		20					25					30				
Ser	Met	Asn	Arg	Leu	Arg	Gln	Ser	Pro	Gly	Gln	Ser	Leu	Glu	Trp	Asn	
		35				40					45					
Gly	Gly	Arg	Asn	Asn	Ser	Ile	Val	Lys	Ser	Ile	Thr	Val	Ser	Ala	Ser	
	50				55					60						
Gly	Thr	Lys	Ala	Thr	Leu	Thr	Ala	Asp	Lys	Ser	Ser	Ser	Thr	Ala	His	
65				70				75						80		
Met	Glu	Leu	Arg	Ser	Pro	Thr	Ser	Glu	Asp	Thr	Ala	Val	Tyr	Tyr	Cys	
			85					90					95			
Ser	Pro	Ser	Tyr	Thr	Tyr	Tyr	Arg	Pro	Gly	Trp	Gly	Gln	Gly	Thr	Leu	
		100						105				110				
Val	Thr	Val	Ser	Ala												
		115														

<210> 13

<211> 107

<212> PRT

<213> Artificial Sequence

<220>

<223> modified light chain variable region of murine antibody

<400> 13

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Asp Ile Gln Thr Thr Gln Ser Gln Lys Ser Gln Ser Thr Ser Ala Gly
 1           5           10           15
Asp Arg Ala Ser Thr Thr Cys Lys Ala Ser Gln Asn Val Ser Thr Asn
          20           25           30
Ala Ala Trp Tyr Gln Gln Thr Pro Gly Gln Ser Pro Lys Ser Leu Ile
          35           40           45
Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Asp Arg Phe Thr Gly
          50           55           60
Ser Gly Ser Gly Thr Asp Phe Thr Gln Thr Thr Ser Asn Ala Gln Ser
65           70           75           80
Glu Asp Ser Ala Glu Phe Phe Cys Gln Gln Tyr Asn Arg Tyr Pro His
          85           90           95
Thr Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
          100           105

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<210> 14

<211> 107

<212> PRT

<213> Artificial Sequence

<220>

<223> modified light chain variable region of murine
antibody

<400> 14

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Asp Ile Gln Thr Thr Gln Ser Gln Lys Ser Gln Ser Thr Ser Ala Gly
 1           5           10           15
Asp Arg Ala Ser Thr Thr Cys Thr Leu Leu Ser Val Thr Arg Asn Asp
          20           25           30
Val Ala Trp Tyr Gln Gln Thr Pro Gly Gln Ser Pro Lys Ser Leu Ile
          35           40           45
Tyr Ala Ala Ser Ser Leu Gln Ser Gly Val Pro Asp Arg Phe Thr Gly
          50           55           60
Ser Gly Ser Gly Thr Asp Phe Thr Gln Thr Thr Ser Asn Ala Gln Ser
65           70           75           80
Glu Asp Ser Ala Glu Phe Phe Cys Tyr Leu Ser Gly Ala Asn Leu Asn
          85           90           95
Leu Phe Gly Gly Gly Thr Lys Leu Glu Leu Lys
          100           105

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<210> 15

<211> 17

<212> PRT

<213> Homo sapiens

<400> 15

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Asn Ile Thr Val Asn Asn Ser Gly Ser Tyr Thr Cys Gln Ala His Asn
 1           5           10           15
Ser

```


<210> 16
<211> 17
<212> PRT
<213> Homo sapiens

<400> 16
Asn Ile Thr Val Asn Asn Ser Gly Ser Tyr Met Cys Gln Ala His Asn
1 5 10 15
Ser

<210> 17
<211> 17
<212> PRT
<213> Homo sapiens

<400> 17
Lys Ile Thr Pro Asn Asn Asn Gly Thr Tyr Ala Cys Phe Val Ser Asn
1 5 10 15
Leu

<210> 18
<211> 17
<212> PRT
<213> Homo sapiens

<400> 18
Gly Arg Asn Asn Ser Ile Val Lys Ser Ile Thr Val Ser Ala Ser Gly
1 5 10 15
Thr

<210> 19
<211> 8
<212> PRT
<213> Homo sapiens

<400> 19
Gly Tyr Ser Trp Tyr Lys Gly Glu
1 5

<210> 20
<211> 8
<212> PRT
<213> Homo sapiens

<400> 20
Ser Tyr Thr Tyr Tyr Arg Pro Gly
1 5

<210> 21
<211> 8
<212> PRT
<213> Homo sapiens

<400> 21
Ser Lys Ala Asn Tyr Arg Pro Gly
1 5

<210> 22
<211> 8
<212> PRT
<213> Hom sapiens

<400> 22
Glu Asp Lys Asp Ala Val Ala Phe
1 5

<210> 23
<211> 9
<212> PRT
<213> Mus musculus

<400> 23
Asn Val Gly Ser Ile Tyr Asn Gln Lys
1 5

<210> 24
<211> 9
<212> PRT
<213> Homo sapines

<400> 24
Ile Val Lys Ser Ile Thr Val Ser Ala
1 5

<210> 25
<211> 9
<212> PRT
<213> Mus musculus

<400> 25
Ile Asn Pro Asn Asn Val Gly Ser Ile

1 5

<210> 26
<211> 10
<212> PRT
<213> Homo sapiens

<400> 26
Ser Ile Val Lys Ser Ile Thr Val Ser Ala
1 5 10

<210> 27
<211> 9
<212> PRT
<213> Mus musculus

<400> 27
Val Gly Ser Ile Tyr Asn Gln Lys Phe
1 5

<210> 28
<211> 9
<212> PRT
<213> Homo sapiens

<400> 28
Ser Ile Val Lys Ser Ile Thr Val Ser
1 5

<210> 29
<211> 8
<212> PRT
<213> Homo sapiens

<400> 29
Leu Ala Thr Arg Asn Asn Ser Ile
1 5

<210> 30
<211> 6
<212> PRT
<213> Mus musculus

<400> 30
Val Gly Ser Ile Tyr Asn
1 5

<210> 31
<211> 7
<212> PRT
<213> Homo sapiens

<400> 31
Ile Val Lys Ser Ile Thr Val
1 5

<210> 32
<211> 9
<212> PRT
<213> Mus musculus

<400> 32
Cys Ala Arg Gly Tyr Gly Asn Tyr Val
1 5

<210> 33
<211> 9
<212> PRT
<213> Homo sapiens

<400> 33
His Leu Phe Gly Tyr Ser Trp Tyr Lys
1 5

<210> 34
<211> 9
<212> PRT
<213> Homo sapiens

<400> 34
Asn Arg Phe Gly Tyr Ser Trp Tyr Lys
1 5